

714/digital
data error
correction

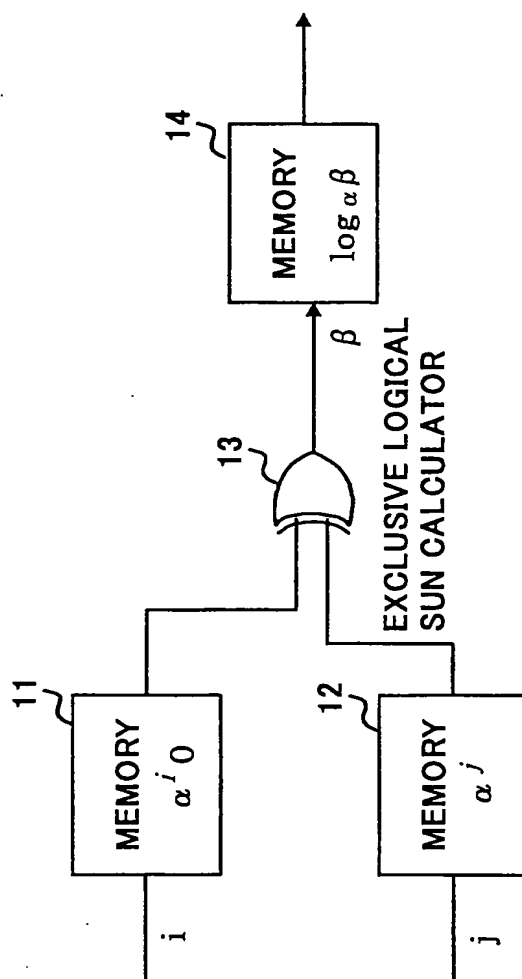


FIG.1

POWER EXPRESSION β	VECTOR EXPRESSION	$\log_{\alpha} \beta$
α^0	100	0
α^1	010	1
α^2	001	2
α^3	110	3
α^4	011	4
α^5	111	5
α^6	101	6
$\alpha^7(0)$	000	(7)

FIG.2

$i \backslash j$	0	1	2	3	4	5	6	7	i_0
0	7	3	6	1	5	4	2	0	0
1	6	4	7	5	1	3	0	2	2
2	4	6	3	2	0	7	1	5	5
3	5	2	1	6	7	0	3	4	4

FIG.3A

$i \backslash j$	0	1	2	3	4	5	6	7	i_0
0	7	3	6	1	5	4	2	0	0
2	4	6	3	2	0	7	1	5	5
1	6	4	7	5	1	3	0	2	2
3	5	2	1	6	7	0	3	4	4

FIG.3B

$i \backslash j$	0	1	2	3	4	5	6	7	i_0
0	7	3	6	1	5	4	2	0	0
2	20	22	19	18	16	23	17	21	5
1	14	12	15	13	9	11	8	10	2
3	29	26	25	30	31	24	27	28	4

FIG.3C

7, 20, 14, 29, 3, 22, 12, 26, 6, 19, 15, 25, 1, 18, 13, 5, 16, 9, 4, 23, 11, 24, 2, 17, 8, 27, 0, 21, 10, 28

FIG.3D

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100:INTERLEAVE ADDRESS GENERATION APPARATUS

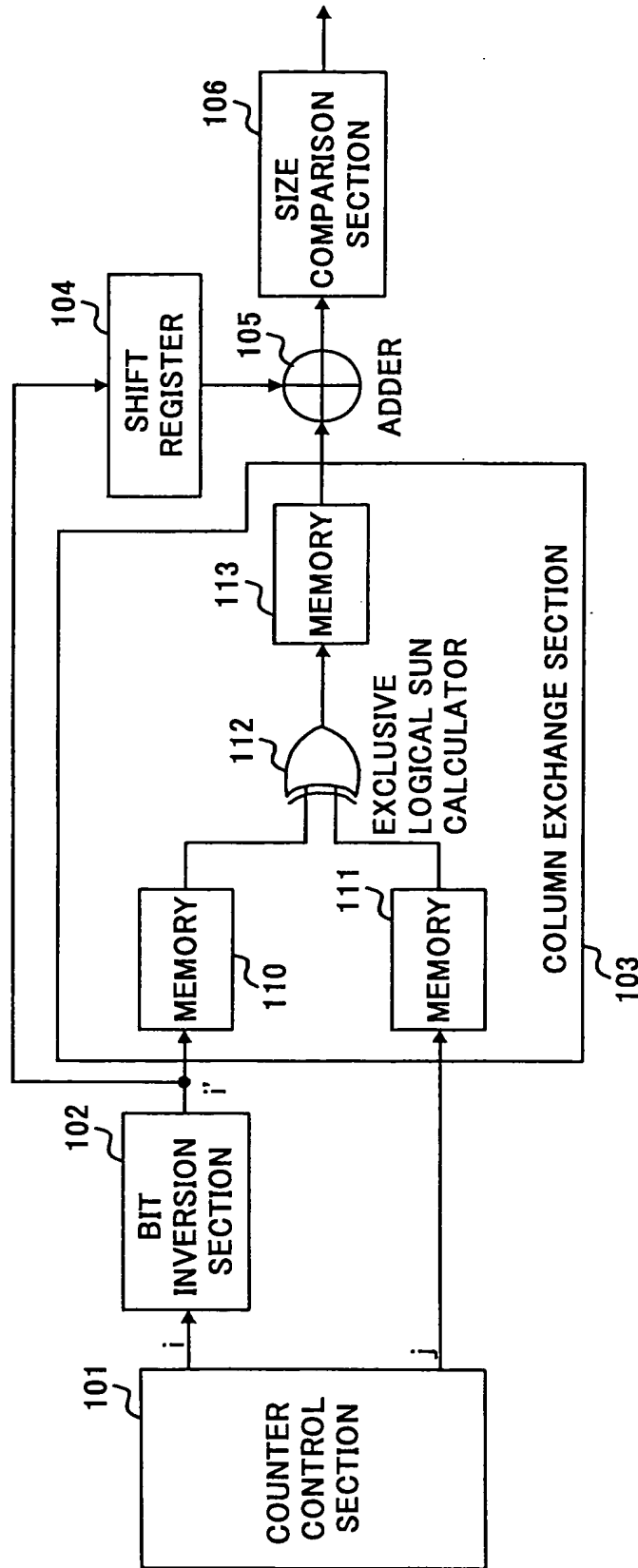


FIG.4

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MEMORY 110

INPUT i 1 DECIMAL	io	OUTPUT α^{io}
0 0 (0)	0	(1, 0, 0)
1 0 (2)	2	(0, 0, 0)
0 1 (1)	5	(1, 1, 1)
1 1 (3)	4	(0, 1, 1)

MEMORY 113

INPUT	OUTPUT
(0, 0, 0)	7
(0, 0, 1)	0
(0, 1, 0)	1
(0, 1, 1)	3
(1, 0, 0)	2
(1, 0, 1)	6
(1, 1, 0)	4
(1, 1, 1)	5

MEMORY 111

INPUT i	OUTPUT α^i
0 0 0 (0)	(1, 0, 0)
0 0 1 (1)	(0, 1, 0)
0 1 0 (1)	(0, 0, 1)
0 1 1 (3)	(1, 1, 0)
1 0 0 (4)	(0, 1, 1)
1 0 1 (5)	(1, 1, 1)
1 1 0 (6)	(1, 0, 1)
1 1 1 (7)	(0, 0, 0)

FIG.5

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<i>i</i>	<i>i'</i>	<i>j</i>	α^{i0}	α^j	$\alpha^{i0} + \alpha^j$	$\log \alpha (\alpha^{i0} + \alpha^j)$	AFTER OFFSET ADDITION
0	0	0	(1, 0, 0)	(1, 0, 0)	(0, 0, 0)	7	7+8 × 0=7
1	2	0	(1, 1, 1)	(1, 0, 0)	(0, 1, 1)	4	4+8 × 2=20
2	1	0	(0, 0, 1)	(1, 0, 0)	(1, 0, 1)	6	6+8 × 1=14
3	3	0	(0, 1, 1)	(1, 0, 0)	(1, 1, 1)	5	5+8 × 3=29
0	0	1	(1, 0, 0)	(0, 1, 0)	(1, 1, 0)	3	3+8 × 0=3
1	2	1	(1, 1, 1)	(0, 1, 0)	(1, 0, 1)	6	6+8 × 2=22
2	1	1	(0, 0, 1)	(0, 1, 0)	(0, 1, 1)	4	4+8 × 1=12
3	3	1	(0, 1, 1)	(0, 1, 0)	(0, 0, 1)	2	2+8 × 3=24

FIG.6

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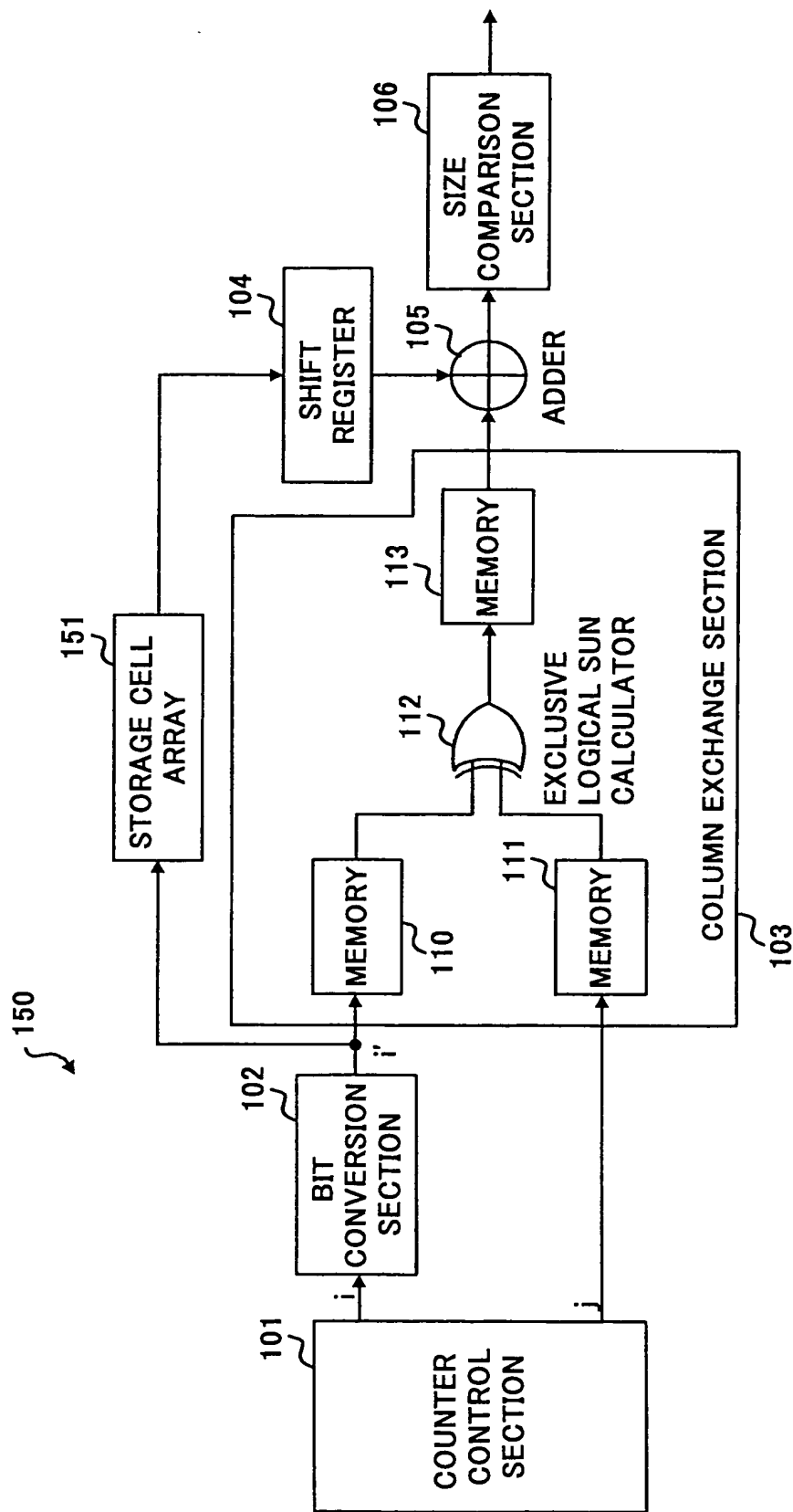


FIG.7

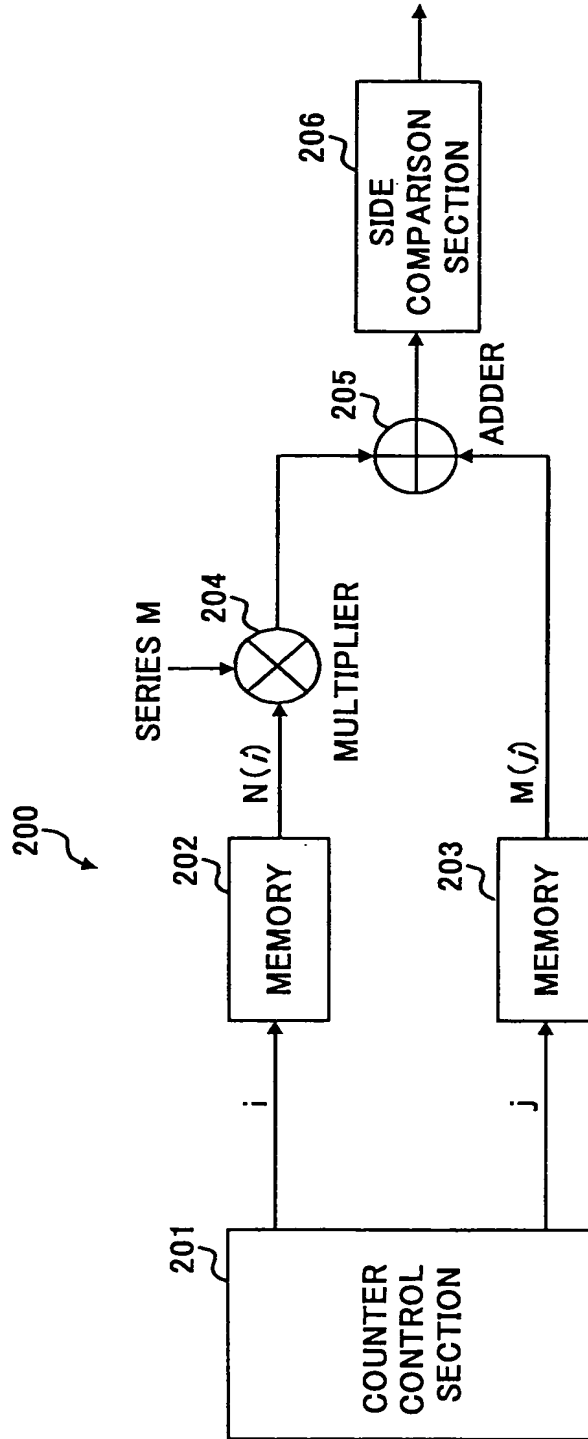


FIG.8

<i>i</i>	<i>N(i)</i>
0	2
1	3
2	0
3	1

FIG.9

<i>j</i>	<i>M(j)</i>
0	3
1	6
2	4
3	2
4	1
5	5
6	7
7	0

FIG.10

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<i>i</i>	0 1 2 3 0 1 2 3 0 0 1 2 3
<i>j</i>	0 0 0 0 1 1 1 1 2 7 7 7 7

FIG.11A

<i>N(j)</i>	2 3 0 1 2 3 0 1 2 2 3 0 1
<i>M(j)</i>	3 3 3 3 6 6 6 6 4 0 0 0 0

FIG.11B

ADDITION RESULT	19 27 3 11 22 30 6 14 20 23 31 7 15
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FIG.11C

INTERLEAVE ADDRESS	19 27 3 11 22 6 14 20 28 8 23 7 15
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FIG.11D

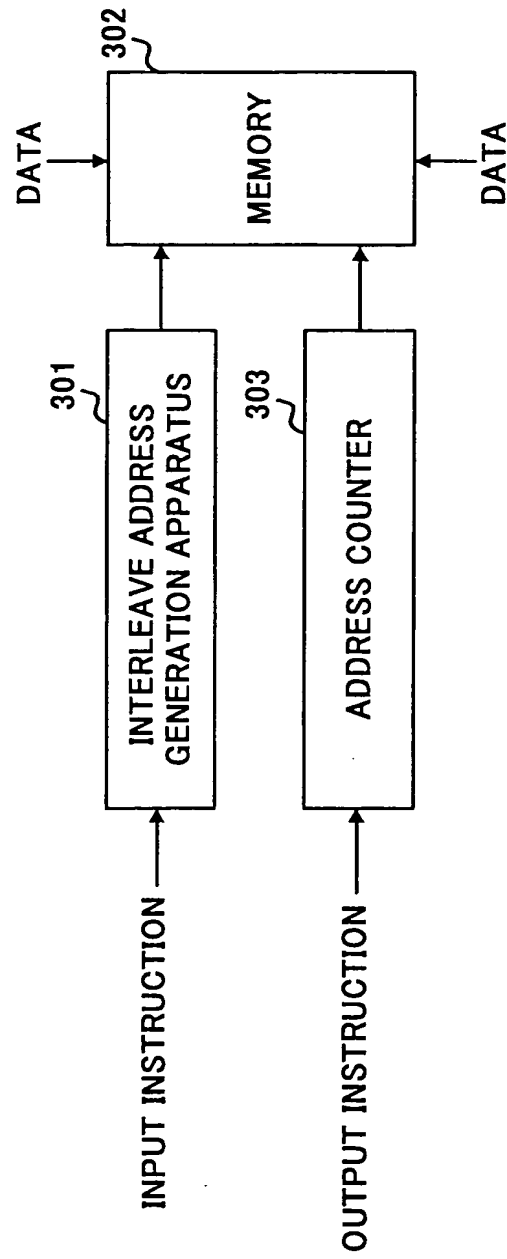


FIG.12

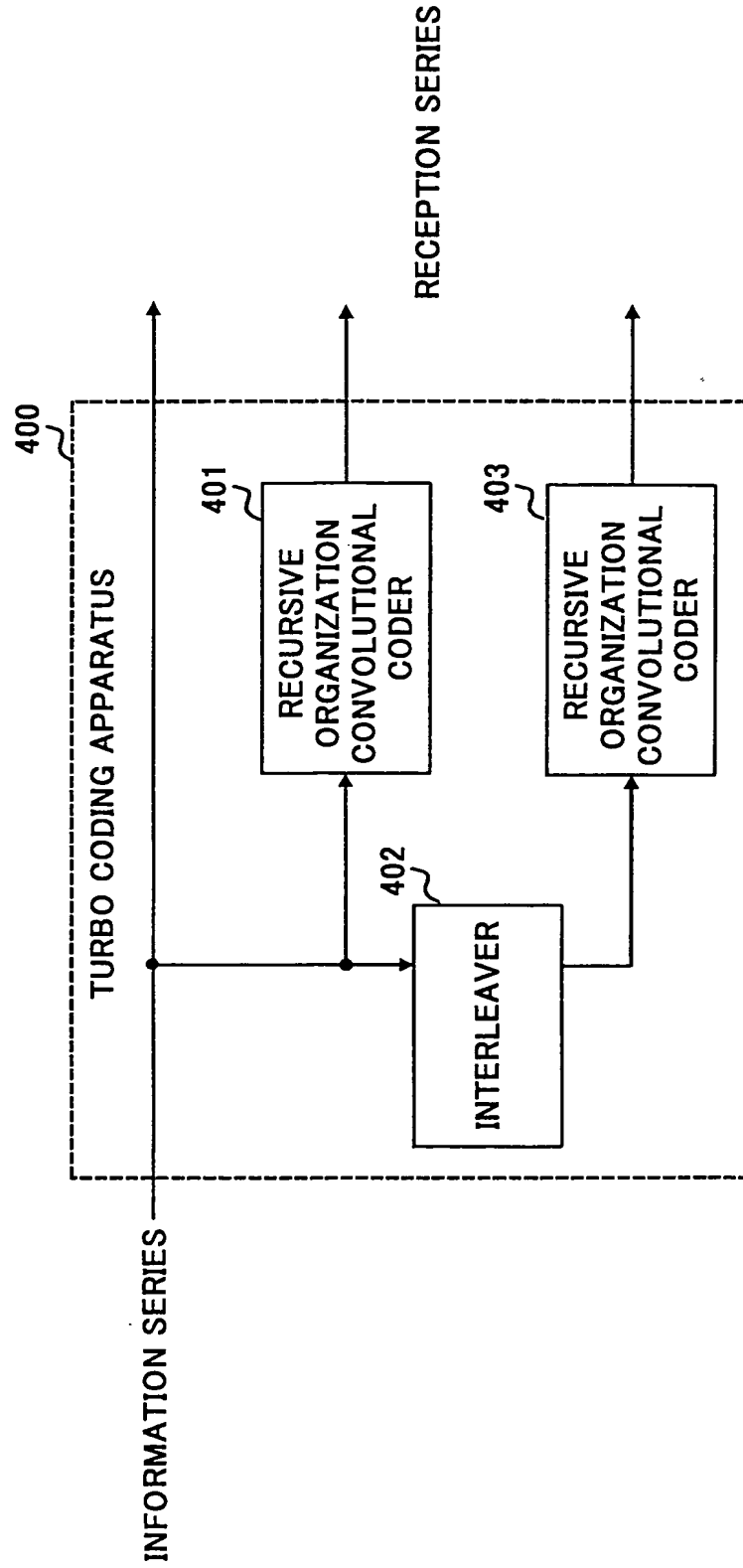


FIG.13

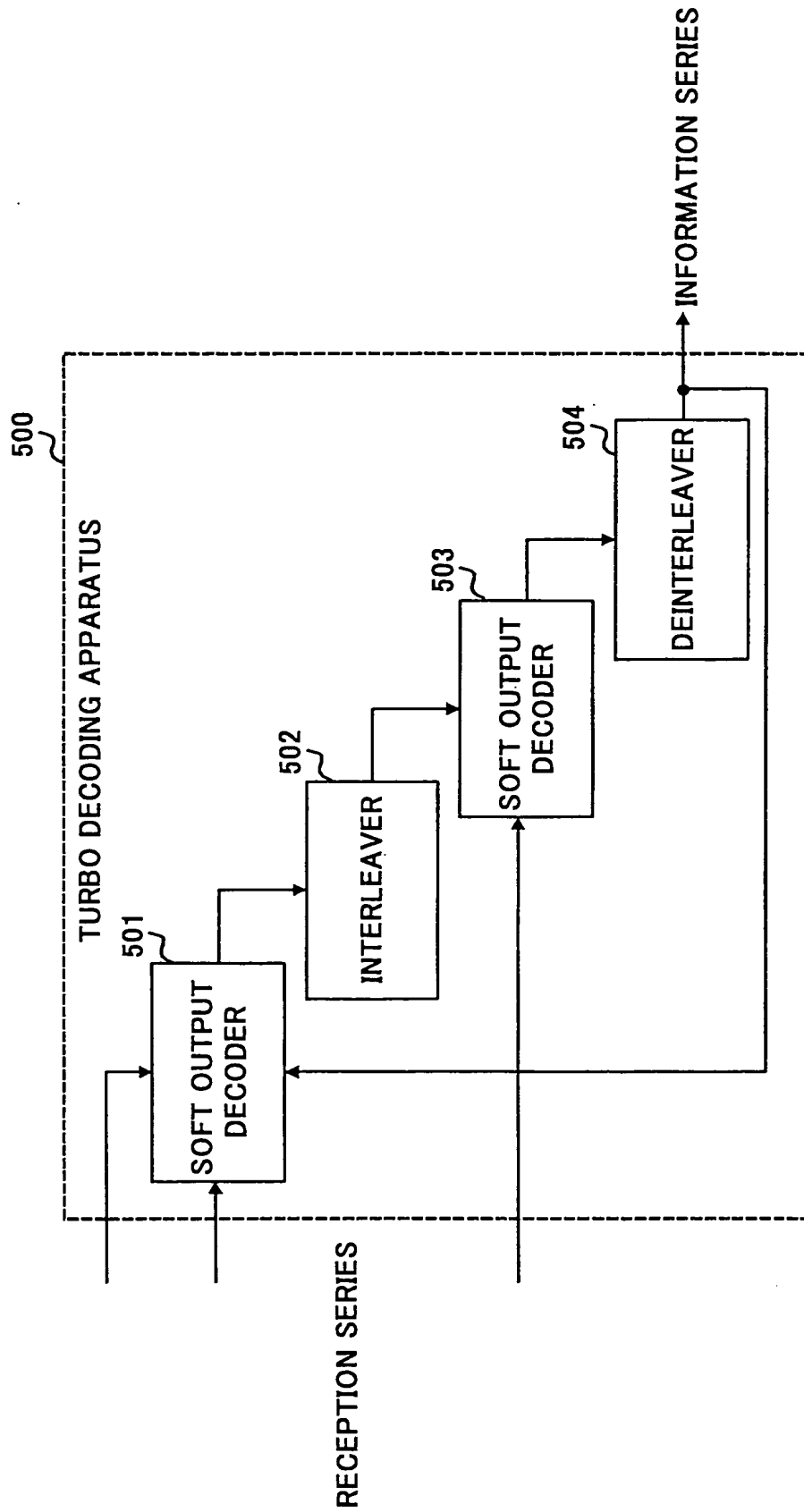


FIG.14

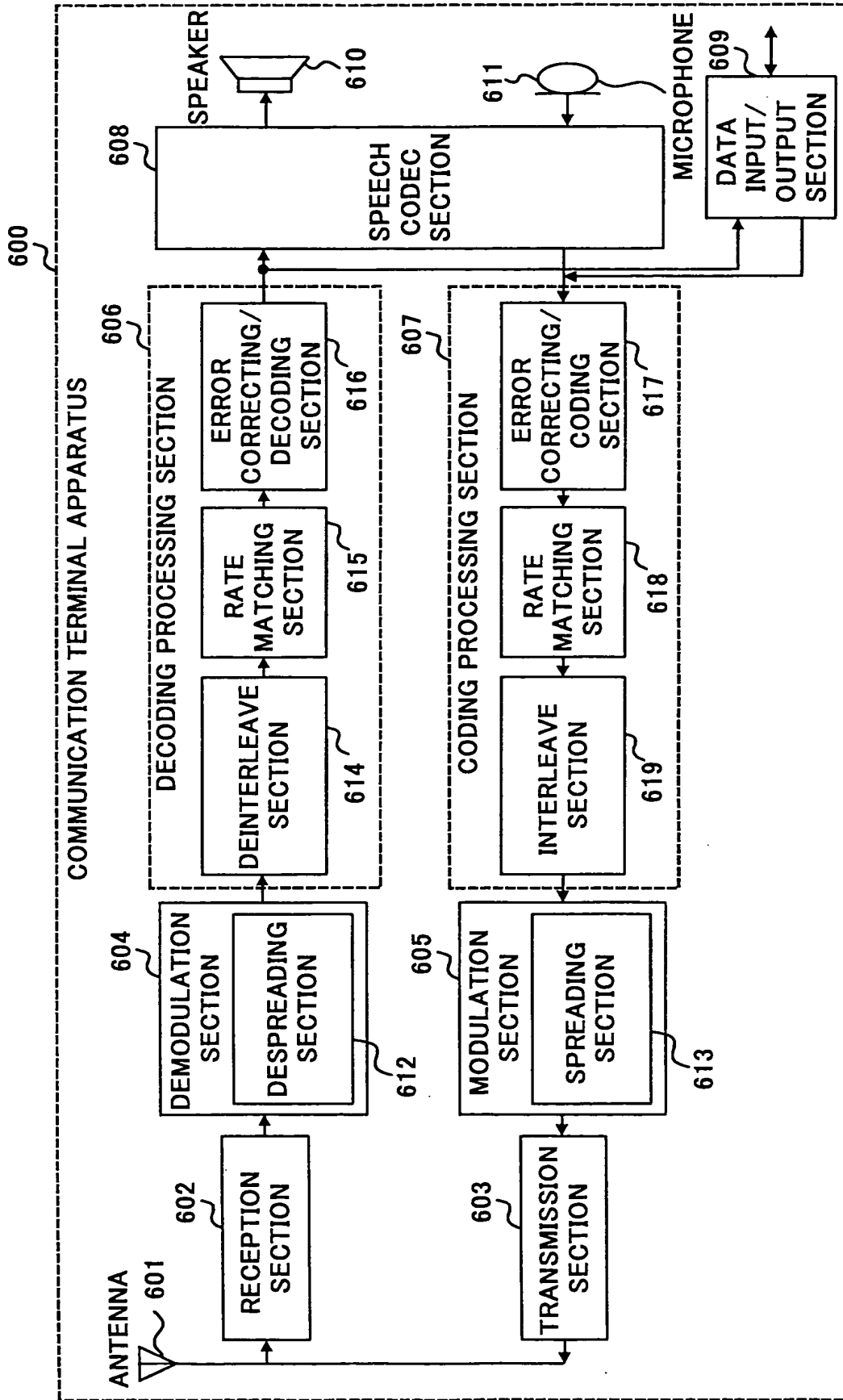


FIG.15

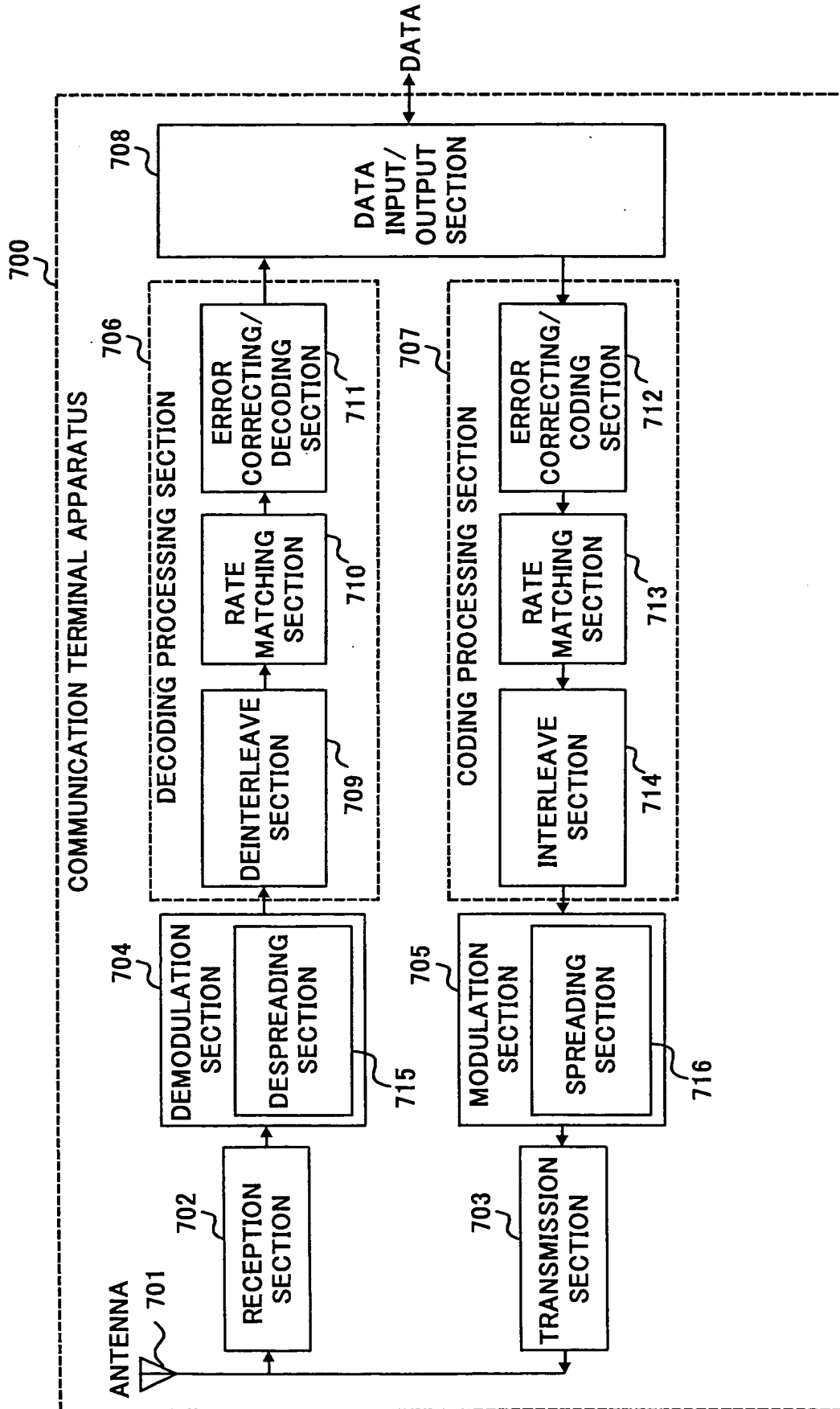


FIG.16